

Proposal for Core Hypothesis

I. Proposed Hypothesis:

- a. Parental actions* will reduce the risk of exposure to chemical agents , physical conditions and social circumstances connected to cognitive, social, emotional, sensory-motor, and health disorders.
- b. Parental actions* will reduce the severity of problems attendant to cognitive, social, emotional, sensory-motor, and health disorders resulting from chemical agents , social circumstances, and physical environmental conditions; and they will reduce the risk of co-morbidities related to those disorders.
- c. Parental actions* aimed at reducing the risk of exposure to chemical agents, social circumstances, and physical environmental conditions connected to cognitive, social, emotional, sensory-motor, and health disorders and the management of those disorders should they arise will increase perceived health quality of life and health efficacy beliefs in children. As well they will improve health related behaviors (including the reduction of risky behaviors).

* in the form of: (a) actions designed to remove hazards from the environment, (b) actions designed to structure the environment so as to reduce the likelihood of a child's exposure to harmful elements, (c) actions designed to structure a child's behavior so as to reduce the likelihood of exposure to harmful elements, (d) actions designed to facilitate the child's involvement in non-harmful (a.k.a., productive) activities which may have the unintended consequence of reducing the likelihood of exposures to harmful elements, (e) actions aimed at educating a child with respect to potentially harmful substances and activities, (f) actions aimed at developing specific competencies that reduce the likelihood of exposure to harmful elements and/or reducing the severity of consequences should exposure occur, and (g) discipline practices aimed at reducing the likelihood a child will engage in behaviors that bring the child in contact with harmful elements.

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IV. Public Health Significance:

- a. Prevalence – since the question being addressed in this hypothesis pertains to parental actions aimed at preventing exposure and exposure is defined very broadly to include a wide array of chemical agents and physical environmental conditions in many forms, the outcomes of concern span the array of cognitive, social, emotional, health, and sensory-motor conditions of interest to the entire study.
- b. Morbidity – although this figure is hard to estimate, the hypothesis is concerned with the prevention of morbidities connected to a wide array of health and developmental conditions.
- c. Quality of Life – this hypothesis directly addresses quality of life pertaining to a vast array of health and developmental conditions and the promotion of quality of life per se.
- d. Mortality – this hypothesis is concerned both with primary prevention of mortality stemming from a broad array of exposures and the prevention of mortality that may follow from inadequate treatment of an array of health conditions caused by these exposures.
- e. Cost – not able to estimate
- f. Perceived importance – Parents are certainly in the first line of defense against exposures to many of the exposures at issue in the NCS. Knowing what they actually do to first prevent exposure, then to mitigate damage once a negative health condition emerges is one of the most critical scientific and public health questions that could be examined in this study. Relatedly, understanding more about what motivates parents to take particular actions, where they get their information about potentially significant actions, and whether those actions actually result in the diminution of risk is of profound public health significance. It can inform any number of public health and health management campaigns and strategies.

V. Justification for Large, Prospective Study:

Given that the number of potentially deleterious environmental conditions that children might be exposed to is large yet the prevalence of any particular negative outcome is small, there is need for a very large and diverse sample to determine how any particular pattern of parenting action may serve to reduce the risks attendant to the diversity of cognitive, social, emotional, health, and sensory-motor disorders that affect children. That issue is compounded when one considers that decisions to take particular actions are likely to be affected by a diversity of cultural, geographic, socio-economic, and family circumstances. There is no basis for assuming that either the decisions regarding parental actions, the nature of those actions, or their consequences for children's well-being will be the same across widely divergent groups. In effect, the availability of a large, diverse sample should increase the probability of understanding something about the nature of health disparities as they are connected to parental actions in different groups. Planning effective public health strategies for reducing risk of exposure requires the kind of precision of information that can only be obtained from a very large prospective study.

Since the root issue of this hypothesis concerns both the prevention of exposure (in some cases from health and developmental conditions that may emerge at any number of times during the life course) and the reduction of morbidity from any conditions that emerge, it is not just a large sample that is required but a prospective, longitudinal design.

Although scientists could certainly obtain the information pertaining to each health condition or developmental problem by studying them one at a time, it would require enormous expense to mount studies on more than a small number. Moreover, much would be lost in such a splintered effort in that separate studies would not allow the degree of integration that will come from studying the full array of conditions to be examined in the NCS simultaneously. Much of what is both common and different pertaining to the various health and developmental conditions will become clearer via this integrated effort than would emerge from separate (even expensive) investigations. Moreover, it would almost impossible to observe the likely “spill-over” or “cross-over” effects that likely occur from parental actions (i.e., individual or closely connected sets of actions) that result in prevention of multiple exposures and reduction of multiple adverse outcomes. In essence, the ability to integrate across conditions (especially for multiple populations) should substantially increase the likelihood of constructing effective interventions that may work to reduce exposure to multiple problematic environmental conditions. Moreover, it will lead to much more authoritative understanding of how parental actions are implicated in the development of positive health behaviors and health quality of life. Studies of individual conditions would be substantially weaker in that regard, even if several were mounted.

VI. Scientific Merit:

Part of the scientific merit is implied in the Justification section (V) immediately above. Beyond that, the incorporation of this hypothesis in the study would provide information about the prevention of various health conditions and developmental problems that is for all practical purposes without precedent. With the exception of a very small amount of information on what parents do to prevent injury, there is virtually no research on what parents do to reduce the risk of exposure to most of the agents and conditions that will be the subject of this study. Relatedly, there is almost no information on the effectiveness of those efforts or how they came to be (i.e., where the information comes from or what motivates parents to act in any certain way). Again, there is essentially no information on how cultural, socio-economic, geographic or other family factors alter the likelihood or pattern of parental actions. There is certainly information “out there” from such well regarded organizations as the American Academy of Pediatrics, CDC, and the Consumer Product Safety Commission advising parents on some potentially useful actions to take; but (a) there is not detailed advice on all potentially damaging agents, and (b) there is almost nothing known about what parents actually do or to what extent it matters. This latter issue is no small scientific matter in that there is evidence that even when parents seem to do “the right thing” as regards reducing exposure to potentially damaging events or conditions, it doesn’t always work. For example, teaching/admonishing children where not to go and what not to do to reduce risk does not always result in their not going there and not doing that.

Parental investment theory stipulates that parents are disposed to act in the best interest of their offspring, providing them protection as well as providing the opportunities and encouragement to facilitate health, competence, and social adaptiveness. That said, just as there is an almost total void in knowing what parents do to prevent and manage the kinds of health conditions NCS will focus on, there is just as complete a void on whether those actions have key down-stream consequences for health behavior, perceived health efficacy, and health quality of life (i.e., consequence beyond what is immediately intended by the parent. Likewise, almost nothing is known about whether either the immediate or downstream consequences vary as a function of demographic factors or family factors (e.g., does it matter if the actions are carried out by both rather than one parent, if father is present or absent).

To most completely understand exposures / environmental conditions and their consequences for children, it will be of great value to understand how parents try to manage them.

VII. Potential for Innovative Research:

As the preceding section (VI – Scientific Merit) tries to convey, there are almost no instances of the kind of study envisioned as part of the NCS that have ever been mounted, even on a very small scale. Not only will the NCS be breaking new scientific ground with the inclusion of this hypothesis, but it will offer the field new measurement technologies in the process.

VIII. Feasibility:

- a. Critical period for exposure and outcomes – This component will continue throughout the duration of the study (as some of the potential for exposure will continue and parental actions aimed at dealing with them will probably change as children mature). Most, if not all, of the health and developmental problems targeted by NCS will be included in this part of the study.
- b. Sampling Needs – the entire sample will be used (meaning every significant demographic subgroup) for some aspects of this substudy. However, there will also be some special targeting based on (a) the likelihood of certain types of exposures in a given area, and (b) the emergence of specific conditions as implied above.
- c. Contact – a brief set of questions will be used for each contact point throughout the study. For those whose children manifest certain problems, additional follow-up questions will be given that pertain to the management of that condition.
- d. Nature of Measurement – almost certainly questionnaire. However, this could be done in person, over the phone, or via mail.
- e. Burden on Family – should be relatively small. There will be a number of questions, but the questions pertain to very concrete actions and circumstances. Assuming that a visit will be made to the child's home for purposes of ascertaining exposure to various chemical agents and physical hazards, part of the data on parental actions will be gathered via direct observations at the time of the visit. There are good, relatively

easy to use measures available from those who are engaged in injury prevention research and those who study physical environments more generally. These measures tend not to be burdensome.

- f. Ethical considerations – The required protections for privacy would obviously have to be adhered to given that the parents will be revealing what they do. It would probably be advisable to have Certificates of Confidentiality to prevent access to their responses for issues pertaining to custody, etc. In the event that a parent would reveal an action that requires reporting for abuse, they would have to be made aware in advance that such actions would have to be reported to the appropriate authorities. It is almost certain that some parents would, by their responses, suggest that they may be neglectful with respect to protecting their children. This issues need to be discussed. It is probably manageable but does need the attention of appropriate committees.